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yond, told me of the birds. "When they first get here, if there isn't a royal battle over those snags!" she exclaimed. "Fight? Yes, scream and holler and fight around those trees. I used to set and watch them birds." The chipmunks, she said, climbed the stubs and the Swallows drove them off. "I used to like to see them fight a squirrel down," she said. "Half a dozen would dive right at him and they'd put him down in a hurry."

Only one family of Tree Swallows were in possession at the time of my visit and their nest was about twenty feet from the ground on the east side of the stub. Once when I was watching it the gardener warned me not to sit near the stubs when the wind was high for, as she said, "they go over sometimes"; but her husband in a tone of superiority remarked that they wouldn't fall in my direction as the wind was from the ocean. When after several visits the birds had become somewhat used to me I put my camp stool down at the foot of the stub where the bracken stood above my head, and the Swallows went about their business unmindful even of the white dogs that had accompanied me. The bark had fallen off the stub from the nest hole down, but still held above and made a shading portico for the door.

The Swallows in coming to the nest would sail down on set wings. If I did not see them I knew they were approaching by seeing their shadows wavering over the shiny gray trunk and the ferns below, and also by the actions of the young which would crane out of the doorway till the sun lit up their three big chirring yellow throats. When the three nestlings' heads crowded the doorway it looked as if the builder, the 'carpintero', had not measured for such a cup full. Occasionally one of the old birds would go down into the nest out of sight, but generally they clung to the doorway feeding the young from outside.

When the female was hanging there the dull sheen of green that showed on her back was in striking contrast to the handsome steel green of the back of the male. When one of the nestlings stood in the doorway the sun rested on its sooty head and lit up its bright eyes as it pecked vaguely at the wood. It was looking out into the world. Perhaps it felt the call of the open sky. In any case the next time I came that way the old stub stood silent and deserted. From being a center of life and interest, a home, it had become a charred dead tree trunk. I turned away as from the empty house of a friend.

(To be continued)

A LIST OF THE BIRDS BREEDING IN SAN FRANCISCO COUNTY, CALIFORNIA

By HAROLD E. HANSEN and WALTER A. SQUIRES

WITH FOUR PHOTOS BY THE AUTHORS

SAN FRANCISCO County has an area of forty-one square miles. In elevation it varies from sea-level up to a little less than one thousand feet above the sea. The eastern part of the county lies in the Upper Sonoran life-zone and the western portion in the Transition life-zone. Alcatraz Island and Yerba Buena Island lying in San Francisco Bay, and the Farallon Islands some thirty miles out to sea beyond the Golden Gate, are included in the coun-

ty. Although the county is small it presents some points of marked ornithological interest.

The Farallon Islands furnish a nesting place for thousands of birds from the open sea, and in the nesting season these rocky islets present one of the most striking ornithological phenomena to be seen in any of the states of our Union. The mainland portion of the county is not without interest to the thoughtful student of birds. There is probably no area of similar size in the State which has so much to teach us concerning the effects of human environment on bird life.

Vast changes have taken place in this little area during the last sixty years. During that time a city of a half-million people has grown up on the tip of the peninsula south of the Golden Gate. Salt marshes have been filled, and the shore line in many places pushed far out into the bay. Hills have been leveled and creeks filled. Bushy hillsides and sand-dune tracts have been built

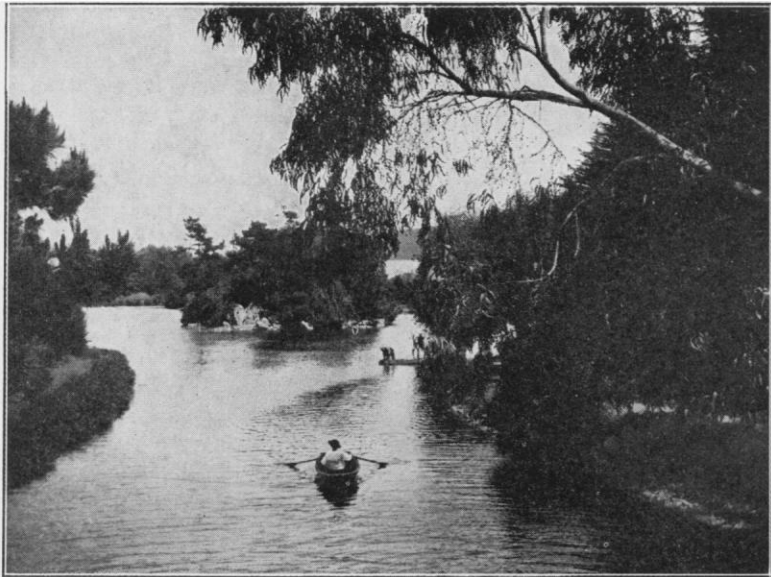


Fig. 20. STOW LAKE, IN GOLDEN GATE PARK, SAN FRANCISCO.

up into residence districts. Such changes must of necessity affect the avifauna of a region.

Indeed, at first thought, one might wonder whether many species of birds would remain after such sweeping changes. That many species have not only survived but have actually increased in numbers, and that several new species have come to make their homes in the county, is the conclusion toward which the present avifaunal condition of the county seems to point.

In undertaking this study of the nesting birds of San Francisco County we have had two objects in view. Our first object has been to furnish to those interested in our birds a reliable list of species making this county their home; for a bird's home is where it builds its nest. Our second object has been to furnish, if possible, some reliable data concerning that far vaster problem, namely, the effect of the occupation of a territory by the white race upon the native birds. In order to furnish data of the last named kind we sought to learn as

much as possible concerning the condition and bird life of this part of the peninsula before the city had grown much or the white man's occupancy of the country had wrought marked effects. We found a few of the early settlers who were able to furnish some helpful hints, but for the most part we had to rely on what one may call "remnants" of the primitive conditions. For example we were able to visualize what the forested hills of the county were before the planting of the forests, by thinking of them as substantially like the Twin Peaks which have remained largely in their primitive condition. The sand-dune tract a little back from the ocean and south of Golden Gate Park is a sample of what a large part of the county must once have been, especially in its western portion. There was no proper forest, hence there must have been few of the tree-loving species of birds in the county in the early days. Here and there was a dense live oak covering. Portions of this ancient live oak copice may yet be seen on Strawberry Hill, in the park north of the conservatory, and about the bear pens; it may also be seen in an even more primitive condition on the hill in the old cemetery known as Laurel Hill Cemetery.

Some species of birds have doubtless been driven from the county, but it seems certain that more have come than have departed. The changes wrought by man have not all been detrimental to the birds. The region now occupied by Golden Gate Park was formerly in the sand-dune tract, for the most part. The sand-dunes are largely barren of bird life, but the park is a kind of bird's Paradise. Its lakes furnish homes for numerous waterfowl, and its forested hills give conditions closely approximating the Boreal areas of the Sierra. Suto Forest adds a thousand acres to the forested area of the county, and the tree covered sections of the Presidio are hardly less extensive. The Lake Merced region is, some of it, in its primitive condition, though here, too, some extensive tree planting has been done. It is very probable that a good many waterfowl have been driven from their native nesting places about Lake Merced and that some sea-going birds have been driven from the mainland portion of the county, as well as from the islands in the bay. That part of the coast which extends from the Cliff House around to Fort Point consists, for the most part, of high rocky cliffs; probably at one time, before the settlement of the county, it teemed with nesting sea birds. Alcatraz Island and Yerba Buena Island were doubtless great breeding places for sea birds also. The name Alcatraz is Spanish for pelican; and the island was probably a roosting place for the California Brown Pelicans, though it is hardly possible that they nested there, since it is so far north of any present nesting site.

Mr. W. Otto Emerson writes that thirty years ago the Bullock Orioles were abundant at Lake Merced; if there are any in the county now, we have failed to find them. Ten years ago Ray listed the Intermediate Wren-tit as a resident of the county, and there is one record of its nesting here (*Oologist*, ix, no. 8, p. 93). It is almost certain that there are none here now. Eggs of the Western Grebe were collected at Merced Lake by A. M. Ingersoll in 1885. These birds are occasionally to be seen there to this day, but they no longer seem to nest there.

We have included in the following list a number of birds for which we have not been able to find any nesting records. In every case, however, there was, in our opinion, a strong probability of their breeding in the county. Frequent observation of a bird in the breeding season would seem to us to establish such a probability. Of course this rule would not apply to certain of the

larger waterfowl, which have non-breeding individuals remaining with us throughout the year. Loons are to be seen at Lake Merced throughout the entire summer; and scoters are apt to appear at any time of year on the ocean just off-shore.

These are non-breeding birds, but we do not believe that this habit of remaining for a season in their winter homes is to be found among the smaller birds. Neither would this rule apply to certain birds which evidently make San Francisco a feeding ground while nesting elsewhere.

The Great Blue Heron, Black-crowned Night Heron and the Anthony Green Heron all come frequently into the Lake Merced region and less frequently to the Islais Marshes, but their nesting places are probably in San Mateo County or possibly in Alameda County. The American Bittern is a not-infrequent visitor to Lake Merced, but no man seems to be able to name its nesting place. Vultures and crows come over occasionally from Marin County, and it is a common experience on a summer evening to hear the hoarse croak of ravens overhead and to see these birds winging their way southward down

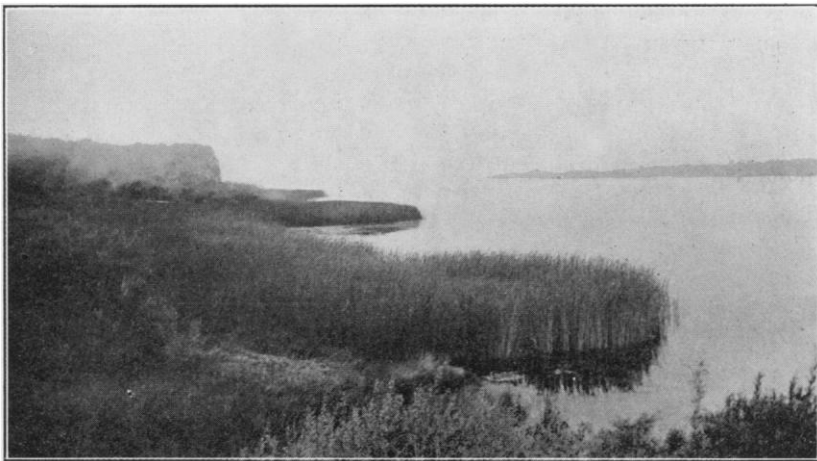


Fig. 21. TULE-FRINGED SHORES OF LAKE MERCED, SAN FRANCISCO COUNTY.

the coast. Gulls of several species are present through the summer, and in mid-summer the great run of the Dark-bodied Shearwaters is at its height just off-shore, and sometimes they pursue their finny prey into the bay.

There are a few other birds the nesting of which within the county, while it cannot be affirmed, is not yet wholly beyond the limits of possibility. The Western Bluebird has been known to nest in the Mission District and may yet be found again nesting in the county. Eared Grebes are seen throughout the year on Lake Merced and it would not be surprising if they should sometime be found to nest there. Some kind of small owl has been shot occasionally by the park game wardens near the Prayer Book Cross. It is possible that they were Coast Screech Owls and that they nest somewhere in the county. The Dusky Horned Owl has been reported several times recently from Sutro Forest.

We are indebted to Jesse Klapp, game warden in Golden Gate Park, for valuable assistance in our field work in the park. We have also gleaned a number of nesting records from Milton S. Ray's paper on the "Summer Birds of San Francisco County, California" (Condor xviii, 1916, p. 222). However,

a desire to see only thoroughly reliable statements concerning our avifauna given publicity, leads us to question two of Mr. Ray's nesting records, which seem to us to be certainly erroneous. His records concerning the nesting of the California Brown Towhee and the Western Kingbird are based on alleged discoveries of Jesse Klapp. Both of these species, if they are to be found in the county at all, are so rare that the finding of the nest of either would be remarkable. There is evidently some mistake in the record, for Mr. Klapp informs us that he has never found the nest of the California Brown Towhee and does not know that he has even seen the bird in the park at any time. He reported to us early in the summer that he had seen a kingbird feeding young

and we went at once to the part of the park where he said he saw it. We did not find any kingbirds but did find the Olive-sided Flycatcher, and Mr. Klapp thinks that the birds he saw may have been this species rather than the Western Kingbird. He says he has found no nests of the kingbird.

So far as we have been able to discover the following list contains all the birds known to be nesting in the county up to the present time, together with those whose nesting in the county is probable.

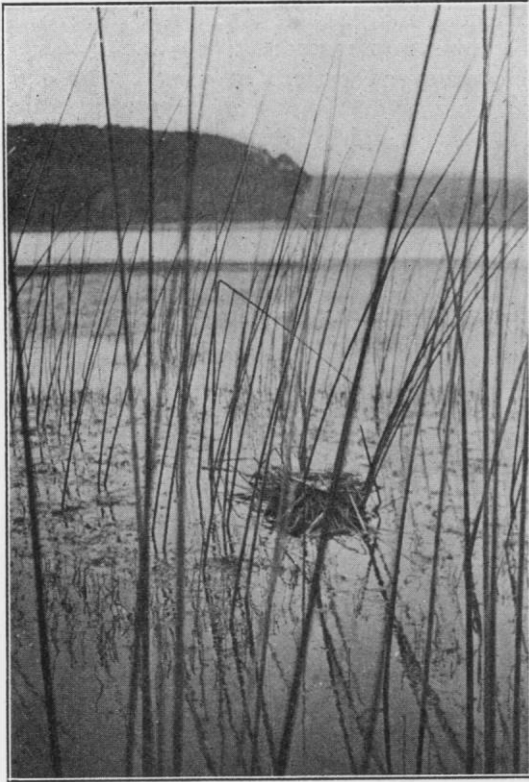


Fig. 22. NEST OF COOT AT EDGE OF LAKE
MERCED, SAN FRANCISCO COUNTY.

half a dozen pairs was found on the cliffs south of the Golden Gate, July 2, 1916. At that time most of the nests contained young. It also breeds on the Farallon Islands.

5. *Uria troile californica*. California Murre. Breeds abundantly on the Farallon Islands.

6. *Larus occidentalis*. Western Gull. Breeds on the Farallon Islands.

7. *Oceanodroma kaedingi*. Kaeding Petrel. Breeds on the Farallon Islands (Loomis, Proc. Calif. Acad. Sci., vi, 1896, p. 359).

8. *Oceanodroma homochroa*. Ashy Petrel. Breeds commonly on the Farallon Islands.

9. *Phalacrocorax auritus albocillatus*. Farallon Cormorant. Breeds on the Farallon Islands. Reported to be breeding on Seal Rocks by W. Leon Dawson. In answer

1. *Podilymbus podiceps*. Pied-billed Grebe. Brood of seven young seen at North Lake in Golden Gate Park, June 11, 1916. Also breeds at Lake Merced; young seen there on several occasions.

2. *Lunda cirrhata*. Tufted Puffin. Breeds abundantly on the Farallon Islands.

3. *Ptychoramphus aleuticus*. Cassin Auklet. The most abundant of the species breeding on the Farallon Islands.

4. *Cephus columba*. Pigeon Guillemot. A nesting colony of

to a letter of inquiry Mr. Dawson says "there can be absolutely no doubt" that the birds he saw there July 21, 1912, were brooding birds.

10. *Phalacrocorax penicillatus*. Brandt Cormorant. Breeds on the Farallon Islands.

11. *Phalacrocorax pelagicus resplendens*. Baird Cormorant. Breeds on the Farallon Islands.

12. *Anas platyrhynchos*. Mallard. Breeds commonly in Golden Gate Park, and in limited numbers at other places in the county. A nest was found at Lake Merced, April 23, 1915. A careful count was made of the mallards in the park in the summer months and about two hundred, old and young, were found to be there as permanent residents. In winter the number is much larger.

13. *Marila affinis*. Lesser Scaup Duck. Breeds at Stow Lake in Golden Gate Park (Mailliard, Condor, xvii, p. 235). A brood of five young was noted by us at Stow Lake, August 1, 1916.

14. *Erismatura jamaicensis*. Ruddy Duck. Breeds at the Chain of Lakes and at Lake Merced. Many young noted.

15. *Rallus virginianus*. Virginia Rail. Noted at Lake Merced throughout the breeding season. Nesting very probable.

16. *Fulica americana*. American Coot. Common; long breeding season; young seen early in April and a nest with fresh eggs discovered August 10.

17. *Oxyechus vociferus vociferus*. Killdeer. Not common. A few nest about the buffalo paddocks in Golden Gate Park; young seen there during the summer of 1916.

18. *Phasianus torquatus*. Ring-necked Pheasant. Breeds in Golden Gate Park unconfined. It also breeds in the open on Yerba Buena Island (Bryant, Calif. Fish and Game, II, p. 163).

19. *Lophortyx californica californica*. California Quail. Abundant in Golden Gate Park and found in lesser numbers at other places in the county.

20. *Zenaidura macroura marginella*. Western Mourning Dove. Not common, but found in small numbers in Golden Gate Park and in the southwestern part of the county. Young were seen in the Presidio and in Golden Gate Park the past summer.

21. *Buteo borealis calurus*. Western Red-tailed Hawk. Seen throughout the year about the Twin Peaks; probably nests in Sutro Forest.

22. *Falco sparverius sparverius*. American Sparrowhawk. Seen throughout the year in the Presidio and about Sutro Forest. Breeding probable.

23. *Aluco pratincola*. American Barn Owl. Nest found in a cliff at Lake Merced, May 1, 1915. Another was found in a tank house at Twenty-fourth Avenue and Ful-



Fig. 23. NEST OF CALIFORNIA QUAIL, WITH 23 EGGS, IN GOLDEN GATE PARK, SAN FRANCISCO.

ton Street, June 6, 1916. The former nest contained two young, the latter four. This owl also breeds at the Stadium in Golden Gate Park.

24. *Speotyto cunicularia hypogaea*. Burrowing Owl. One was captured at Forty-third Avenue and Fulton Street, February 26, 1916. Birds of this species were noted by De Groot in the vicinity of Visitacion Valley, February 24, 1915 (Ray, Condor, xviii, p. 224).

25. *Ceryle alcyon caurina*. Western Belted Kingfisher. Sparingly resident at Lake Merced. Holes found in cliffs there were evidently made by this species.

26. *Colaptes cafer collaris*. Red-shafted Flicker. Nest found at the buffalo paddocks in Golden Gate Park, May 14, 1916. Not very common.

27. *Calypte anna*. Anna Hummingbird. Abundant. Many nesting records.

28. *Selasphorus alleni*. Allen Hummingbird. Common; many nesting records.

29. *Sayornis nigricans*. Black Phoebe. Nests about buildings in the western part of Golden Gate Park, and probably at other places in the county.

30. *Nuttallornis borealis*. Olive-sided Flycatcher. Not common. Seen throughout the past summer in Golden Gate Park and in Sutro Forest. Nesting probable.

31. *Empidonax difficilis difficilis*. Western Flycatcher. Not an uncommon bird in Golden Gate Park and at Lake Merced, but nests not often found. Only a few nesting records.

32. *Otocoris alpestris actia*. California Horned Lark. Rather common resident on Twin Peaks, near Ingleside, in the Presidio, and on Bernal Heights.

33. *Aphelocoma californica californica*. California Jay. Common in Laurel Hill Cemetery; rather rare elsewhere in the county.

34. *Agelaius phoeniceus californicus*. Bicolored Blackbird. Nesting colonies were found at North Lake in Golden Gate Park, near Ingleside Beach, and on the eastern tip of the northern portion of Lake Merced.

35. *Sturnella neglecta*. Western Meadowlark. Rather common in the southwestern part of the county, also found in the Richmond District.

36. *Euphagus cyanocephalus*. Brewer Blackbird. Nesting colonies numerous in Golden Gate Park, also on Sutro Heights, and near the South Side Life Saving Station.

37. *Carpodacus purpureus californicus*. California Purple Finch. Rather common in Golden Gate Park and in Sutro Forest. Several nesting records.

38. *Carpodacus mexicanus frontalis*. California Linnet. Very common; nests abundantly.

39. *Astragalinus tristis salicamans*. Willow Goldfinch. Nests in willows near water; several nesting records from Lake Merced.

40. *Astragalinus psaltria hesperophilus*. Green-backed Goldfinch. Common; nests in larger trees than the preceding.

41. *Astragalinus lawrencei*. Lawrence Goldfinch. Not common, but seen often enough in the breeding season to make the nesting of the species in the county highly probable.

42. *Spinus pinus pinus*. Pine Siskin. Not uncommon, in the park, Sutro Forest and in the Presidio. Several nesting records.

43. *Passer domesticus*. English Sparrow. Most numerous bird in the county.

44. *Passerculus sandwichensis bryanti*. Bryant Marsh Sparrow. Breeds on the Islais Marshes; young seen there June 7, 1916. Birds apparently of this same subspecies, but averaging somewhat lighter in color, are resident at the Ingleside Golf Links, in the Presidio, and high up the slopes of Twin Peaks. If these are *bryanti* their occurrence so far from their usual habitat on the salicornia marshes is rather puzzling.

45. *Zonotrichia leucophrys nuttalli*. Nuttall Sparrow. The most abundant native bird in the county.

46. *Junco oreganus*, subsp? (Sierra Junco or Point Pinos Junco). The subspecific standing of the juncos breeding in San Francisco County has not yet been determined. From the nearness of the range of the Point Pinos Junco we might expect the San Francisco birds to be of that subspecies. On the other hand the Juncos found near Palo Alto and those recently discovered nesting in Berkeley were Sierra Juncos. It is possible that both subspecies will yet be found in the county. We have noted numerous young the past two years both in the Park and in Sutro Forest. We have also seen them about Lake Merced.

47. *Melospiza melodia santaecrucis*. Santa Cruz Song Sparrow. Abundant; probably next to the Nuttall Sparrow in point of numbers among the native birds.
48. *Melospiza melodia pusillula*. Salt Marsh Song Sparrow. Resident in marshes of the southeastern part of the county; range extends north to Islais Marsh.
49. *Pipilo maculatus falcifer*. San Francisco Towhee. Common; many nesting records.
50. *Zamelodia melanocephala capitalis*. Pacific Black-headed Grosbeak. Rare; seen only occasionally in summer. Young birds were noted in Golden Gate Park by Storer.
51. *Passerina amoena*. Lazuli Bunting. Rare; a pair was observed by J. R. Pemberton at Eighteenth and Ashbury streets, carrying nesting materials, during the latter part of May and the early part of June, 1915. Mr. Pemberton writes us that he left the city on June 10th and had not found the nest at that time.
52. *Petrochelidon lunifrons lunifrons*. Cliff Swallow. Nesting colonies were discovered on a barn south of the Potrero District, June 7, 1916; also at Good Brothers Dairy on Corbett Road, June 21, 1916.
53. *Riparia riparia*. Bank Swallow. Hundreds breed in the cliffs of Lake Merced, and a few along the ocean cliffs.
54. *Hirundo erythrogaster*. Barn Swallow. A nest was found in a garage at Ingleside Beach, June 16, 1916. It is not abundant in the breeding season.
55. *Lanius ludovicianus gambeli*. California Shrike. Resident in limited numbers in the southwestern part of the county. One nest found at Ingleside Golf Links.
56. *Vireosylva gilva swainsoni*. Western Warbling Vireo. Not common, but seen often enough in summer to make the nesting of the species in the county probable.
57. *Vireo huttoni huttoni*. Hutton Vireo. Not common. One was seen feeding a young bird in Golden Gate Park, May 1, 1916.
58. *Vermivora celata lutescens*. Lutescent Warbler. Reported by Carriger to have bred on Strawberry Hill previous to 1906. If it nests in the park at present it is rare.
59. *Dendroica aestiva brewsteri*. California Yellow Warbler. Common; many nesting records.
60. *Geothlypis trichas sinuosa*. Salt Marsh Yellowthroat. Common; many nesting records.
61. *Wilsonia pusilla chryseola*. Golden Pileolated Warbler. Rather common; many young seen.
62. *Salpinctes obsoletus obsoletus*. Rock Wren. Breeds on the Farallon Islands.
63. *Thryomanes bewicki spilurus*. Vigors Wren. Common; many nesting records.
64. *Troglodytes aëdon parkmani*. Western House Wren. Rather rare; noted about the buildings in the western part of the park, May 30, 1916. Breeding probable.
65. *Telmatodytes palustris paludicola*. Tule Wren. Resident in small numbers at Lake Merced.
66. *Baeolophus inornatus inornatus*. Plain Titmouse. Rare; seen only occasionally in summer. One breeding record (Ray, Condor, VIII, pp. 42-44).
67. *Penthestes rufescens barlowi*. Santa Cruz Chickadee. Not uncommon. We found several nests in the park and at Lake Merced.
68. *Psaltriparus minimus minimus*. Coast Bush-tit. Common; many nesting records.
69. *Hylocichla ustulata ustulata*. Russet-backed Thrush. Rather common. Many nesting records.
70. *Planesticus migratorius propinquus*. Western Robin. Breeds in considerable numbers in Golden Gate Park and at Sutro Heights.

Of the birds here listed some are certainly new arrivals. The Junco and the Pine Siskin have doubtless been induced to remain here and to nest because of the approximately boreal conditions brought about by the planting of trees. The Western Robin has not been noted as a breeding bird of the county until the last year or so. It seems to be losing its wildness and to be seeking closer re-

lationships with man after the manner of the Eastern Robin to which it is so closely related.

The English Sparrow was introduced some forty years ago and has increased enormously. The Brewer Blackbird is probably another late addition to the breeding birds of the county, as it was listed as rare some years ago and is now abundant. The nesting of the Barn Swallow does not seem to have been noted before and it is likely that it is increasing in numbers as is also the Cliff Swallow. The nesting of the Pigeon Guillemot is of especial interest. This seems to be a case of a species returning to the nesting place of its ancestors after years of absence from the ancestral homesite.

It is our opinion that many of the species of birds mentioned in this list are increasing in the county. This is largely due to the protection given them in Golden Gate Park. The custom of the park management, however, of shooting the male mallards during the winter is to be deplored. Such shooting drives away the more timid waterfowl and thus keeps many of the rare species out of the park. There are already three times as many female mallards as male mallards in the park, as any one can see for himself by counting them. Given adequate protection, the number of birds in the park ought to go on increasing for years.

The Lake Merced region is a natural bird refuge, and it would be the part of wisdom to make it such in fact. If the waterfowl and other species of birds found there were given adequate protection the bird life of the region would in a few years be such as to surpass the expectations of the most sanguine—an unending source of pride, pleasure, and profit to all right thinking people of this generation and to all the generations that are to come.

San Francisco, California, December 20, 1916.

GEOGRAPHICAL VARIATION IN *SPHYRAPICUS THYROIDEUS*

By H. S. SWARTH

(Contribution from the Museum of Vertebrate Zoology of the University of California)

THE acquisition during recent years by the Museum of Vertebrate Zoology of fairly representative series of Williamson Sapsuckers from various parts of California led to the careful examination of these birds to determine whether more than one recognizable race might be included among them. A preliminary survey of the Museum series disclosed the need of additional material from certain points, and the necessary specimens were borrowed from the collection of John E. Thayer, from the Museum of Comparative Zoology, through Mr. Outram Bangs, and from the collection of the Geological Survey of Canada, through Mr. P. A. Taverner. There are in the Museum of Vertebrate Zoology, including the Grinnell, Morcom and Swarth collections, ninety-nine specimens of this species. Altogether 123 skins were examined.

Critical study of specimens from various parts of the Pacific Coast, from British Columbia to southern California, always with due regard to seasonal and other variations, shows no tangible differences in either sex, existing between birds from different latitudes, contrary to a first impression that the northern individuals were of appreciably larger size.